

## REMARKS

Applicants respectfully request reconsideration of the present U.S. patent application. Claims 1-16 stand rejected under 35 U.S.C. § 103. No claims have been amended, canceled or added. Therefore, claims 1-16 remain pending.

### Claim Rejections - 35 U.S.C. § 103

#### Rejections of Claims 1 and 9 based on *Burnham* in view of *Beernink*

Claims 1 and 9 were rejected under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 4,546,480 issued to Burnham et al. (*Burnham*) in view of U.S. Patent No. 5,708,674 issued to Beernink et al. (*Beernink*). For at least the reasons set forth below, Applicants submit that claims 1 and 9 are not rendered obvious by *Burnham* and *Beernink*.

Claim 1 recites the following:

an undoped layer located over the active region, the undoped layer having a barrier region including aluminum located thereover, wherein the barrier region does not form a portion of the active region; ....

Claim 9 is a method claim and recites similar limitations.

*Burnham* discloses an injection laser having quantum size effect transparent waveguiding, where the laser includes an active layer having an active region. See Abstract. The active layer with the active region is located on a first cladding layer, which is located on a substrate, a second cladding layer is formed on the active layer, and a content layer is located on the second cladding layer. See Fig. 2; col. 2, lines 21-36. *Burnham* also discloses that the injection laser may include a transparent waveguide layer between the first cladding layer and the active layer. See Fig. 3, col. 5, lines 32-40. Also, the active layer may include multiple layers of undoped GaAs/GaAlAs in addition to the active region. See Fig. 4; col. 5, lines 46-57.

*Burnham* discloses only a substrate, an active layer, two cladding layers, a content layer, plus a waveguide layer. *Burnham* does not disclose an undoped layer located over an active region, the undoped layer having a barrier region including aluminum located thereover, wherein the barrier region does not form a portion of the active region. According to the Examiner, the “active layers of the *Burnham* reference” are not distinguishable from “the barrier layers” of claims 1 and 9. See Office Action, page 5, lines 2-6. However, Applicants respectfully assert that there is one active layer in *Burnham*, and that it is distinguishable from the barrier region in claims 1 and 9.

While the active layer in *Burnham* is distinguishable from the barrier region in claims 1 and 9 in a number of ways, one way is the fact that the active layer in *Burnham* is not such that an undoped layer located over the active layer includes a barrier region that does not form a portion of the active layer. As pointed out previously, the layer located on the active layer in *Burnham* is a cladding layer, and *Burnham* does not disclose that the cladding layer includes a barrier region.

Another way the active layer in *Burnham* is distinguishable from the barrier region in claims 1 and 9 is that the active layer in *Burnham* fails to include a barrier region that does not form a portion of the active layer. As pointed out previously, the active layer in *Burnham* includes an active region and may also include multiple layers of undoped GaAs/GaAlAs. Neither the active region nor the layers of undoped GaAs/GaAlAs layers is a barrier region. Moreover, both the active region and the layers of undoped GaAs/GaAlAs form part of the active layer.

For at least the reasons set forth above, *Burnham* fails to disclose an undoped layer located over an active region, the undoped layer having a barrier region including

aluminum located thereover, wherein the barrier region does not form a portion of the active region.

*Beernink* fails to cure the deficiencies of *Burnham* pointed out by Applicant. The Examiner cites *Beernink* because *Burnham* fails to disclose that an active layer is situated under a barrier layer. See Office Action, page 3, lines 3-4. Regardless of whether the Examiner's interpretation of *Beernink* is correct, *Beernink* does not disclose an undoped layer located over an active region, the undoped layer having a barrier region including aluminum located thereover, wherein the barrier region does not form a portion of the active region.

For at least the reasons set forth above, *Burnham* in view of *Beernink* does not disclose at least one limitation of claims 1 and 9. Consequently, claims 1 and 9 are not rendered obvious by *Burnham* in view of *Beernink* for at least the reasons set forth above. Applicants therefore respectfully request that the Examiner withdraw the rejection of claims 1 and 9 under 35 U.S.C. § 103.

Rejections of Claims 2-8 and 10-16 based on *Burnham* in view of *DePoorter*

Claims 2-8 and 10-16 were rejected under 35 U.S.C. § 103 as being unpatentable over on *Burnham* in view of WO 97/50133 issued to DePoorter (*DePoorter*). For at least the reasons set forth below, Applicants submit that claims 2-8 and 10-16 are not rendered obvious by *Burnham* in view of *DePoorter*.

Applicants agree with the Examiner that *Burnham* fails to disclose the limitations of claims 2-8 and 10-16. See Office Action, page 3, line 13 – page 4, line 15. However, Examiner contends that *DePoorter* discloses the limitations of claims 2-8 and 10-16. Applicants do not concede that *DePoorter* discloses the limitations of claims 2-8 and 10-16. Applicants assert, however, that *DePoorter* does not disclose an undoped layer

located over an active region, the undoped layer having a barrier region including aluminum located thereover, wherein the barrier region does not form a portion of the active region, as recited in claims 1 and 9. Therefore, regardless of whether the Examiner's interpretation of *DePoorter* is correct, *DePoorter* fails to cure the deficiencies of *Burnham* pointed out by Applicants. Consequently, the combination of *Burnham* and *DePoorter* fails to disclose at least one limitation of claims 1 and 9. Thus, claims 1 and 9 and are not rendered obvious by the combination of *Burnham* and *DePoorter*.


Claims 2-8 depend from claim 1. Claims 10-16 depend from claim 9. Because dependent claims include the limitations of the claims from which they depend, Applicants submit that claims 2-8 and 10-16 are not rendered obvious by *Burnham* in view of *DePoorter* for at least the reasons set forth above. Applicants therefore respectfully request that the Examiner withdraw the rejection of claims 2-8 and 10-16 under 35 U.S.C. § 103.

#### CONCLUSION

For at least the foregoing reasons, Applicants submit that the rejections have been overcome. Therefore, claims 1-16 are in condition for allowance and such action is respectfully solicited. The Examiner is respectfully requested to contact the undersigned by telephone if such contact would further the examination of the present application.

Respectfully submitted,

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Joseph A. Pugh  
Reg. No. 52,137

TriQuint Semiconductor, Inc.  
2300 NE Brookwood Parkway  
Hillsboro, OR 97124  
(503) 615-9616